

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of claims:**

Claims 1-2 (canceled)

Claim 3 (currently amended): ~~The X-ray apparatus according to claim 2,~~ A digital X-ray scanning apparatus (1) comprising an X-ray source (2), an X-ray collimator (3), an X-ray detector (14), mounting means (9-11) for mounting the X-ray detector (14), scanning means (12, 7) for scanning (8b, 27) the X-ray detector (14) over an area (5), means (16) for digital data acquisition from the X-ray detector (14) and a control unit (2c) for steering the X-ray apparatus (1), wherein

the mounting and scanning means (9-12, 7) comprise additional means (13, 15) for orienting (8c) the X-ray detector (14) in at least one dimension towards the X-ray source (2) during a digital scanning procedure,

an orienting movement (8c) and a scanning movement (8b, 27) are independent degrees of freedom of the X-ray detector (14) and

the X-ray apparatus (1) can steer the orienting movement (8c) of the X-ray detector (14) in coordination with the scanning movement (8b, 27) of the X-ray detector (14);

the mounting and scanning means (9-12, 7) comprise translational means (11, 12) for moving the X-ray detector (14) along a straight line segment (8b, 27) or along a curved or circular line segment,

the additional means (13, 15) comprise rotational means (13, 15) for tilting (8c) the X-ray detector (14) in order to maintain a constant aspect ratio of the X-ray detector (14) as

viewed from the X-ray source (2), and

the X-ray detector (14) is a single- or multi-line digital X-ray detector (14);

characterized in that

a) the translational means (11) is a carriage (11) that is movable in a direction perpendicular to its lateral extension,

b) the rotational means (13) is a rotatable plate (13) that is mounted on the carriage (11) and ~~is designed for receiving~~ receives the X-ray detector (14), and

e) ~~in particular that~~ the rotatable plate (13) is laterally extended for receiving an elongated single-line digital X-ray detector (14) suitable for partial or full body X-ray scanning (8a, 8b, 27).

Claim 4 (currently amended): ~~The X-ray apparatus (1) according to claim 2,~~  
~~characterized in that~~ A digital X-ray scanning apparatus (1) comprising an X-ray source (2); an X-ray collimator (3), an X-ray detector (14), mounting means (9-11) for mounting the X-ray detector (14), scanning means (12, 7) for scanning (8b, 27) the X-ray detector (14) over an area (5), means (16) for digital data acquisition from the X-ray detector (14) and a control unit (2c) for steering the X-ray apparatus (1), wherein

the mounting and scanning means (9-12, 7) comprise additional means (13, 15) for orienting (8c) the X-ray detector (14) in at least one dimension towards the X-ray source (2) during a digital scanning procedure,

an orienting movement (8c) and a scanning movement (8b, 27) are independent degrees of freedom of the X-ray detector (14) and

the X-ray apparatus (1) can steer the orienting movement (8c) of the X-ray detector (14) in coordination with the scanning movement (8b, 27) of the X-ray detector (14);

the mounting and scanning means (9-12, 7) comprise translational means (11, 12) for

moving the X-ray detector (14) along a straight line segment (8b, 27) or along a curved or circular line segment,

the additional means (13, 15) comprise rotational means (13, 15) for tilting (8c) the X-ray detector (14) in order to maintain a constant aspect ratio of the X-ray detector (14) as viewed from the X-ray source (2), and

the X-ray detector (14) is a single- or multi-line digital X-ray detector (14); further comprising

a) a housing (10) for receiving the translational and rotational means (11, 13) ~~is provided~~, which housing (10) can be kept stationary during the scanning movement (8b, 27) and

b) ~~in particular that~~ wherein the mounting and scanning means (9-12, 7) comprise means (9, 7) for repositioning the housing (10) for different scanning procedures.

Claim 5 (currently amended): ~~The X-ray apparatus (1) according to claim 1,~~  
A digital X-ray scanning apparatus (1) comprising an X-ray source (2), an X-ray collimator (3), an X-ray detector (14), mounting means (9-11) for mounting the X-ray detector (14), scanning means (12, 7) for scanning (8b, 27) the X-ray detector (14) over an area (5), means (16) for digital data acquisition from the X-ray detector (14) and a control unit (2c) for steering the X-ray apparatus (1), wherein

the mounting and scanning means (9-12, 7) comprise additional means (13, 15) for orienting (8c) the X-ray detector (14) in at least one dimension towards the X-ray source (2) during a digital scanning procedure,

an orienting movement (8c) and a scanning movement (8b, 27) are independent degrees of freedom of the X-ray detector (14) and

the X-ray apparatus (1) can steer the orienting movement (8c) of the X-ray detector (14) in coordination with the scanning movement (8b, 27) of the X-ray detector (14);

characterized ~~in that~~ by

- a) means for swiveling (8d) the X-ray source (2) and the collimator (3, 3a) in coordination with the scanning movement (8b, 27) and orienting movement (8c) of the X-ray detector (14) ~~are provided~~ and
- b) ~~in particular that~~ a balanced suspension of the X-ray source (2) and the collimator (3, 3a) for a torque-free swiveling movement (8d) ~~is provided~~.

Claim 6 (currently amended): ~~The X-ray apparatus (1) according to claim 1,~~ A digital X-ray scanning apparatus (1) comprising an X-ray source (2), an X-ray collimator (3), an X-ray detector (14), mounting means (9-11) for mounting the X-ray detector (14), scanning means (12, 7) for scanning (8b, 27) the X-ray detector (14) over an area (5), means (16) for digital data acquisition from the X-ray detector (14) and a control unit (2c) for steering the X-ray apparatus (1), wherein

the mounting and scanning means (9-12, 7) comprise additional means (13, 15) for orienting (8c) the X-ray detector (14) in at least one dimension towards the X-ray source (2) during a digital scanning procedure,

an orienting movement (8c) and a scanning movement (8b, 27) are independent degrees of freedom of the X-ray detector (14) and

the X-ray apparatus (1) can steer the orienting movement (8c) of the X-ray detector (14) in coordination with the scanning movement (8b, 27) of the X-ray detector (14);

characterized ~~in that~~ by

- a) a motor drive unit (15) and mechanical coupling means (23) ~~are provided~~ for synchronously driving the scanning movement (8b, 27) and the orienting movement (8c) of the X-ray detector (14) and a translational or swiveling movement (27; 8a, 8d) of the X-ray source (2) ~~or~~, wherein the X-ray apparatus has

moving parts and

~~b) several motor drive units (15) and an electrical control means (2c) for driving and synchronizing the scanning movement (8b, 27) and the orienting movement (8c) of the X-ray detector (14) and a translational or swiveling movement (27; 8a, 8d) of the X-ray source (2) are provided and in particular that sliding clutches are provided~~ are mounted between the at least one motor drive unit (15) and moving parts (2,3,4,9,10) of the X-ray apparatus (1).

Claim 7 (currently amended): ~~A digital X-ray scanning apparatus (1) according to claim 1,~~  
A digital X-ray scanning apparatus (1) comprising an X-ray source (2), an X-ray collimator (3), an X-ray detector (14), mounting means (9-11) for mounting the X-ray detector (14), scanning means (12, 7) for scanning (8b, 27) the X-ray detector (14) over an area (5), means (16) for digital data acquisition from the X-ray detector (14) and a control unit (2c) for steering the X-ray apparatus (1), wherein

the mounting and scanning means (9-12, 7) comprise additional means (13, 15) for orienting (8c) the X-ray detector (14) in at least one dimension towards the X-ray source (2) during a digital scanning procedure,

an orienting movement (8c) and a scanning movement (8b, 27) are independent degrees of freedom of the X-ray detector (14) and

the X-ray apparatus (1) can steer the orienting movement (8c) of the X-ray detector (14) in coordination with the scanning movement (8b, 27) of the X-ray detector (14);

~~comprising an X-ray source (2), an X-ray collimator (3), an X-ray detector (14), mounting means (9-11) for mounting the X-ray detector (14), scanning means (12, 7) for scanning (8b, 27) the X-ray detector (14) over an area (5), means (16) for digital data acquisition from the X-ray detector (14) and a control unit (2c) for steering the X-ray~~

~~apparatus (1), wherein~~ additional photographic X-ray imaging means (2, 3, 4) comprising a cassette holder (4) for photographic films ~~are provided~~, characterized in that

a) the mounting means (9-11) comprise a housing (10) that ~~is designed for receiving~~ receives the X-ray detector (14) and the cassette holder (4) in such a way that the X-ray detector (14) and the photographic film are facing towards different side faces of the housing (10) and

b) the mounting means (9-11) ~~are designed for performing~~ perform a reorienting movement (8z) of the housing (10) such that either the film cassette (4) or the X-ray detector (14) is positioned for X-ray imaging.

Claim 8 (currently amended): The X-ray apparatus (1) according to claim 7, characterized in that

a) the housing (10) ~~is adapted for receiving~~ receives the X-ray detector (14) on a front side (24) and the cassette holder (4) on a back side (25) and

e) the mounting means (9-11) has an axis (z) for rotating the front side (24) or the back side (25) of the housing (10) towards an X-ray source (2).

Claim 9 (currently amended): The X-ray apparatus (1) according to claim 7, characterized in that

~~a) the same X-ray source (2) is used for both digital and photographic X-ray imaging~~  
~~and/or~~

b) the X-ray collimator (3) is removable or a slit (3a) is openable for photographic X-ray imaging ~~and/or~~ and

e) the X-ray collimator (3) or the slit (3a) is steered automatically, ~~in particular~~ by means selected from the group consisting of a sensor indicating the presence of a photographic film in the cassette holder (4) ~~and/or by~~, a switch in the cassette holder

(4) ~~and/or by~~, a sensor indicating an orientation of the housing (10) for either digital or photographic X-ray imaging ~~and/or by~~, a manual switch ~~and/or by means of and~~ software.

Claims 10-16 (canceled)

Claim 17 (currently amended): ~~The X-ray apparatus (1) according to claim 1,~~ A digital X-ray scanning apparatus (1) comprising an X-ray source (2), an X-ray collimator (3), an X-ray detector (14), mounting means (9-11) for mounting the X-ray detector (14), scanning means (12, 7) for scanning (8b, 27) the X-ray detector (14) over an area (5), means (16) for digital data acquisition from the X-ray detector (14) and a control unit (2c) for steering the X-ray apparatus (1), wherein

a) the mounting and scanning means (9-12, 7) comprise additional means (13, 15) for orienting (8c) the X-ray detector (14) in at least one dimension towards the X-ray source (2) during a digital scanning procedure,

b) ~~wherein~~ an orienting movement (8c) and a scanning movement (8b, 27) are independent degrees of freedom of the X-ray detector (14) and

the X-ray apparatus (1) can steer the orienting movement (8c) of the X-ray detector (14) in coordination with the scanning movement (8b, 27) of the X-ray detector (14);

~~characterized in that for full or partial body digital X-ray imaging by distance ranges~~ 900 mm < d<sub>1</sub> < 1450 mm, 500 mm < d<sub>2</sub> < 900 mm and 10 mm < d<sub>3</sub> < 200 mm are provided for full or partial body digital X-ray imaging, where d<sub>1</sub>=distance between the X-ray source (2) and the X-ray detector (14), d<sub>2</sub>=distance between the X-ray collimator slit (3a) and the X-ray detector (14) and d<sub>3</sub>=distance between the patient (5) and the X-ray detector (14).

Claim 18 (currently amended): ~~The X-ray apparatus (1) according to claim 1,~~ A digital X-ray scanning apparatus (1) comprising an X-ray source (2), an X-ray collimator (3), an X-ray

detector (14), mounting means (9-11) for mounting the X-ray detector (14), scanning means (12, 7) for scanning (8b, 27) the X-ray detector (14) over an area (5), means (16) for digital data acquisition from the X-ray detector (14) and a control unit (2c) for steering the X-ray apparatus (1), wherein

the mounting and scanning means (9-12, 7) comprise additional means (13, 15) for orienting (8c) the X-ray detector (14) in at least one dimension towards the X-ray source (2) during a digital scanning procedure,

wherein an orienting movement (8c) and a scanning movement (8b, 27) are independent degrees of freedom of the X-ray detector (14) and

the X-ray apparatus (1) can steer the orienting movement (8c) of the X-ray detector (14) in coordination with the scanning movement (8b, 27) of the X-ray detector (14);

characterized in that

a) a supporting arm (9) ~~for carrying~~ carries the X-ray source (2), the X-ray collimator (3) and a housing (10) for the detector (14) ~~is provided~~ and

b) the supporting arm (9) is rotatable and the X-ray source (2) together with the X-ray collimator (3) and the housing (10) for the detector (14) are tiltable with respect to the supporting arm (9) in order to position the X-ray source (2), the X-ray collimator (3) and the detector (14) for X-raying a standing, sitting or lying patient (5).

Claim 19 (currently amended): The X-ray apparatus (1) according to claim 18, characterized in that the X-ray source (2) and/or the housing (10) for the X-ray detector (14) are movable along the supporting arm (9) for selecting a distance  $d_1$  between the X-ray source (2) and the X-ray detector (14) or, ~~in particular,~~ a photographic film in a cassette holder (4) contained in the housing (10).

Claim 20 (currently amended): The X-ray apparatus (1) according to claim 18,



characterized in that

a) the supporting arm (9) has a suspension that is movable horizontally (27) for X-  
raying a lying patient ~~and/or,~~

b) the supporting arm (9) has a suspension that is movable vertically (27) for X-raying  
a standing or sitting patient ~~and/or,~~ and

d) the supporting arm (9) is rotatable by at least 90° in order to switch between X-raying  
a standing or sitting and a lying patient (5).

Claim 21 (New): A digital X-ray scanning apparatus (1) comprising an X-ray source (2),  
an X-ray collimator (3), an X-ray detector (14), mounting means (9-11) for mounting the X-ray  
detector (14), scanning means (12, 7) for scanning (8b, 27) the X-ray detector (14) over an area  
(5), means (16) for digital data acquisition from the X-ray detector (14) and a control unit (2c) for  
steering the X-ray apparatus (1), wherein

the mounting and scanning means (9-12, 7) comprise additional means (13, 15) for  
orienting (8c) the X-ray detector (14) in at least one dimension towards the X-ray source (2)  
during a digital scanning procedure,

an orienting movement (8c) and a scanning movement (8b, 27) are independent degrees  
of freedom of the X-ray detector (14) and

the X-ray apparatus (1) can steer the orienting movement (8c) of the X-ray detector (14)  
in coordination with the scanning movement (8b, 27) of the X-ray detector (14);

characterized by

several motor drive units (15) and an electrical control means (2c) for driving and  
synchronizing the scanning movement (8b, 27) and the orienting movement (8c) of the X-  
ray detector (14) and a translational or swiveling movement (27; 8a, 8d) of the X-ray  
source (2), wherein the X-ray apparatus has moving parts and

sliding clutches are mounted between at least one motor drive unit (15) and the moving parts (2,3,4,9,10) of the X-ray apparatus (1).